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Filed: January 11, 2002
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AMENDMENTS TO THE CLAIMS

This **Listing of Claims** replaces all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended) A base station for providing flexible data rate transmission in a telecommunications system comprising:

an interface operable to receive an incoming data stream;

a signal processor coupled to the interface, the signal processor operable to:

receive the incoming data stream from the interface;

select an operating downlink chip rate from at least two chip rates independently of a receiving device, wherein a first chip rate of said at least two chip rates is equal to a fraction n/p of a second chip rate of said at least two chip rates, wherein said second chip rate comprises a standard chip rate;

select a spreading factor; and

spread the incoming data stream into a spread data stream with a channelization code; and

a transmitter coupled to the signal processor, the transmitter operable to receive the spread data stream from the signal processor and transmit the spread data stream over an air interface.

Claim 2 (original) The base station of claim 1, wherein the at least two chip rates are 3.84 Mchips/second and 3.84 x (n/p) Mchips/second, where n/p is selected from 1/2, 2/5, 1/3, 1/4, and 1/5.

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Claim 3 (currently amended) A base station for providing flexible data rate transmission in a telecommunications system comprising:

        an interface operable to receive an incoming data stream;

        a signal processor coupled to the interface, the signal processor operable to:

        receive the incoming data stream from the interface;

        select an operating downlink chip rate from at least two chip rates;

        select a spreading factor; and

        spread the incoming data stream into a spread data stream with a channelization code; and

a transmitter coupled to the signal processor, the transmitter operable to receive the spread data stream from the signal processor and transmit the spread data stream over an air interface; The base station of claim 1, wherein the signal processor is further operable to: segment the incoming data stream into one or more frames, each frame comprising one or more slots having a desired number of slots, the desired number of slots variable in accordance with the selected chip rate.

Claim 4 (currently amended) The base station of claim 1 [[3]], wherein the signal processor is further operable to: select the operating downlink chip rate from the at least two chip rates, wherein the first of the two chip rates is equal to a fraction, n/p, of the second of the chip rates, where n/p is selected from 1/2, 2/5, 1/3, 1/4, and 1/5.

Claim 5 (currently amended). The base station of claim 3 [[4]], wherein the signal processor is further operable to: set the number of slots within the frame to 15, if n/p is equal to 1/2 or 1/4; set the number of slots within the frame to 10, if n/p is equal to 1/3; and set the number of slots to 12, if n/p is equal to 1/5 or 2/5.

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Claim 6 (original) The base station of claim 5, wherein the signal processor is further operable to: select the spreading factor based on a quality of service, q, and the operating chip rate.

Claim 7 (original) The base station of claim 1, wherein the signal processor is further operable to:

where the first of the two chip rates is equal to a fraction, n/p, of the second of the chip rates, and where i=1 to 2, n=1 to i, and q=0 to (7-i+n-1), select the spreading factor, SF^R, as

$$SF^R = n \times \frac{512}{2^{q+i}}$$

Claim 8 (original) The base station of claim 7, wherein the signal processor is further operable to:

select a number of slots, $N_S{}^R$, as:

$$\text{if } p - 2^i, N_S^R = N_S,$$

$$\text{if } p - 2^i + 1, N_S^R = N_S \times \frac{2^i}{p}$$

Claim 9 (original) The base station of claim 4, wherein the signal processor is further operable to:

select the spreading factor, SF^R, as:

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$$\text{if } n/p - \frac{1}{2} \text{ or } \frac{1}{4} \text{ , } SF^R - \frac{512}{2^{q+1}} \text{ ,}$$

$$\text{if } n/p = \frac{1}{3}, \frac{1}{5} \text{ or } \frac{2}{5} \text{ , } SF^R = n \times \frac{512}{2^{q+2}} \text{ .}$$

Claim 10 (original) The base station of claim 1, wherein the signal processor is further operable to generate a synchronization signal at the selected operating downlink chip rate, and the transmitter is further operable to transmit the synchronization signal.

Claim 11 (currently amended) The base station of claim 1, further comprising: a receiver coupled to the signal processor, the receiver operable to receive a second spread data stream from the air interface which has been transmitted at an operating uplink chip rate selected from one of the at least two chip rates, wherein ~~the first of the chip rates is equal to a fraction, n/p, of the second of the chip rates, where~~ n/p is selected from 1/2, 2/5, 1/3, 1/4, and 1/5.

Claim 12 (currently amended) A method of providing flexible data rate transmission in a telecommunication system, comprising:

receiving an incoming data stream;

selecting an operating chip rate from at least two chip rates <u>wherein a first chip rate of said at least two chip rates is equal to a fraction n/p of a second chip rate of said at least two chip rates, wherein said second chip rate comprises a standard chip rate</u>;

selecting a spreading factor;

and spreading the incoming data stream into a spread data stream with a channelization code.

Claim 13 (currently amended) The method of claim 12, further comprising: segmenting the incoming data stream into one or more frames, each frame comprising one or more slots having a desired number of slots, the desired number of slots variable in accordance with the selected chip rate.

Claim 14 (currently amended) The method of claim 13, wherein the stage of selecting further comprises: selecting the operating downlink chip rate from at least two chip rates, wherein the first of the chip rates is equal to a fraction, n/p, of the second of the chip rates, where n/p is selected from 1/2, 2/5, 1/3, 1/4, and 1/5.

Claim 15 (original) The method of claim 14, further comprising: setting the number of slots within the frame to 15, if n/p is equal to 1/2 or 1/4; setting the number of slots within the frame to 10, if n/p is equal to 1/3; and setting the number of slots to 12, if n/p is equal to 1/5 or 2/5.

Claim 16 (original) The method of claim 15, wherein selecting the spreading factor further comprises: selecting the spreading factor based on a quality of service, q, and the operating chip rate.

Claim 17 (currently amended) The method of claim 12, wherein selecting the spreading factor further comprises:

where the first of the two chip rates is equal to [[a]] the fraction, n/p, of the second of the chip rates, and where i=1 to 2, n=1 to i, and q=0 to (7-i+n-1), selecting the spreading factor, SF^R, as

$$SF^R = n \times \frac{512}{2^{q+i}} \cdot$$

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Claim 18 (original) The method of 17, further comprising selecting a number of slots, $N_S{}^R$, as:

if $p=2^i$, $N_S{}^R=N_S$,

$$\text{if } p = 2^i + 1, N_S^R - N_S \times \frac{2^i}{p}.$$

Claim 19 (original) The method of claim 14, wherein selecting the spreading factor further comprises: setting the spreading factor, SF^R, to:

$$\text{if } n/p = \frac{1}{2} \text{ or } \frac{1}{4}, SF^R - \frac{512}{2^{q+1}}, \text{ or}$$

$$\text{if } n/p = \frac{1}{3}, \frac{1}{5} \text{ or } \frac{2}{5}, SF^R = n \times \frac{512}{2^{q+2}}.$$

Claim 20 (original) The method of claim 12, further comprising: generating a synchronization signal at the selected operating downlink chip rate and transmitting the synchronization signal.

Claim 21 (currently amended)   The method of spreading an incoming data stream of claim 12, further comprising:

receiving a second spread data stream from an air interface which has been transmitted at an operating uplink chip rate selected from one of the at least two chip rates, wherein ~~the first of the chip rates is equal to a fraction, n/p, of the second of the chip rates, where~~ n/p is selected from 1/2, 2/5, 1/3, 1/4, and 1/5.

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Claim 22 (currently amended) A user equipment for providing flexible data rate transmission in a telecommunications system comprising:

an interface operable to receive an incoming data stream;

a signal processor coupled to the interface, the signal processor operable to:

receive the incoming data stream from the interface;

select an operating uplink chip rate from at least two chip rates wherein a first chip rate of said at least two chip rates is equal to a fraction n/p of a second chip rate of said at least two chip rates, wherein said second chip rate comprises a standard chip rate;

select a spreading factor; and

spread the incoming data stream into a spread data stream with a channelization code; and

segment the incoming data stream into one or more frames, having a desired number of slots, the desired number of slots variable in accordance with the selected chip rate;

and

a transmitter coupled to the signal processor, the transmitter operable to receive the spread data stream from the signal processor and transmit the spread data stream over an air interface.

Claim 23 (original) The user equipment of claim 22, wherein the at least two chip rates are 3.84 Mchips/second and 3.84x(n/p) Mchips/second, where n/p is selected from 1/2, 2/5, 1/3, 1/4, and 1/5.

Claim 24 (original) The user equipment of claim 22, wherein the signal processor is further operable to: segment the incoming data stream into one or more frames, each frame comprising one or more slots.

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Claim 25 (currently amended) The user equipment of claim 24, wherein the signal processor is further operable to: select an operating uplink chip rate from at least two chip rates, wherein ~~the first of the chip rates is equal to a fraction, n/p, of the second of the chip rates, where~~ n/p is selected from 1/2, 2/5, 1/3, 1/4, and 1/5.

Claim 26 (original) The user equipment of claim 25, wherein the signal processor is further operable to: set the number of slots within the frame to 15, if n/p is equal to 1/2 or 1/4; set the number of slots within the frame to 10, if n/p is equal to 1/3; and set the number of slots to 12, if n/p is equal to 1/5 or 2/5.

Claim 27 (original) The user equipment of claim 26, wherein the controller is further operable to: select the spreading factor based on a quality of service, q, and the operating chip rate.

Claim 28 (original) The user equipment of claim 22, wherein the signal processor is further operable to:

where the first of the two chip rates is equal to a fraction, n/p, of the second of the chip rates, and where i=1 to 2, n=1 to i, and q=0 to (6-i+n-1), select the spreading factor, SF^R, as

$$SF^R = n \times \frac{256}{2^{q+i}} .$$

Claim 29 (currently amended) The user equipment of claim 22, further comprising: a receiver coupled to the signal processor, the receiver operable to receive a second spread data stream from the air interface which has been transmitted at an operating uplink chip rate selected from

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one of the at least two chip rates, wherein the first of the chip rates is equal to a fraction, n/p, of the second of the chip rates, where n/p is selected from 1/2, 2/5, 1/3, 1/4, and 1/5.

Claim 30 (currently amended) A computer-readable medium having executable instructions for performing steps that provide flexible data rate transmission in a telecommunication system, the steps comprising:

receiving an incoming data stream;

selecting an operating chip rate from at least two chip rates wherein a first chip rate of said at least two chip rates is equal to a fraction n/p of a second chip rate of said at least two chip rates, wherein said second chip rate comprises a standard chip rate;

selecting a spreading factor; and

spreading the incoming data stream into a spread data stream with a channelization code.

Claim 31 (currently amended) The computer-readable medium of claim 30 having further executable instructions for: segmenting the incoming data stream into one or more frames, each frame comprising one or more slots having a desired number of slots, the desired number of slots variable in accordance with the selected chip rate.

Claim 32 (currently amended) The computer-readable medium of claim 31 [[32]] having further executable instructions for: selecting the operating downlink chip rate from at least two chip rates, wherein the first of the chip rates is equal to a fraction, n/p, of the second of the chip rates, where n/p is selected from 1/2, 2/5, 1/3, 1/4, and 1/5.

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Claim 33 (original) The computer-readable medium of claim 32 having further executable instructions for: setting the number of slots within the frame to 15, if n/p is equal to 1/2 or 1/4; setting the number of slots within the frame to 10, if n/p is equal to 1/3; and setting the number of slots to 12, if n/p is equal to 1/5 or 2/5.

Claim 34 (original) The computer-readable medium of claim 33 having further executable instructions for: selecting the spreading factor based on a quality of service, q, and the operating chip rate.

Claim 35 (original) The computer-readable medium of claim 30 having further executable instructions for:

where the first of the two chip rates is equal to a fraction, n/p, of the second of the chip rates, and where i=1 to 2, n=1 to i, and q=0 to (7-i+n-1), selecting the spreading factor, SF^R, as

$$SF^R - n \times \frac{512}{2^{q+i}} \cdot$$

Claim 36 (original) The computer-readable medium of claim 35 having further executable instructions for: selecting a number of slots, N_S^R, as:

if $p=2^i$, $N_S^R = N_S$,

if $p = 2^i + 1$, $N_S^R - N_S \times \frac{2^i}{p} \cdot$

Claim 37 (original) The computer-readable medium of claim 32 having further executable instructions for:

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setting the spreading factor, SF^R, to:

$$\text{if } n/p = \frac{1}{2} \text{ or } \frac{1}{4}, \; SF^R - \frac{512}{2^{q+1}}, \text{ or}$$

$$\text{if } n/p = \frac{1}{3}, \frac{1}{5} \text{ or } \frac{2}{5}, \; SF^R = n \times \frac{512}{2^{q+2}}.$$

Claim 38 (original) The computer-readable medium of claim 30 having further executable instructions for: transmitting a synchronization channel at the selected downlink chip rate.

Claim 39 (currently amended) The computer-readable medium of claim 30 having further executable instructions for: receiving a second spread data stream from an air interface which has been transmitted at an operating uplink chip rate selected from one of the at least two chip rates, wherein ~~the first of the chip rates is equal to a fraction, n/p, of the second of the chip rates, where~~ n/p is selected from 1/2, 2/5, 1/3, 1/4, and 1/5.

Claim 40 (currently amended) A signal processor for providing flexible data rate transmission in a telecommunications system comprising:

an input operable to receive an incoming data stream;

a processor coupled to the input, the processor operable to:

receive the incoming data stream from the input;

select an operating downlink chip rate from at least two chip rates <u>wherein a first chip rate of said at least two chip rates is equal to a fraction n/p of a second chip rate of said at least two chip rates, wherein said second chip rate comprises a standard chip rate</u>;

select a spreading factor; and

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spread the incoming data stream into a spread data stream with a channelization code;
and an output coupled to the processor, the output operable to receive the spread data stream
from the processor.

Claim 41 (original). The signal processor station of claim 40, wherein the at least two chip rates
are 3.84 Mchips/second and 3.84x(n/p) Mchips/second, where n/p is selected from 1/2, 2/5, 1/3,
1/4, and 1/5.

Claim 42 (currently amended) The signal processor of claim 40, wherein the processor is further
operable to: segment the incoming data stream into one or more frames, ~~each frame comprising~~
~~one or more slots~~ having a desired number of slots, the desired number of slots variable in
accordance with the selected chip rate

Claims 43 (currently amended) The signal processor of claim 42, wherein the processor is
further operable to: select the operating downlink chip rate from the at least two chip rates,
wherein ~~the first of the two chip~~ rates is ~~equal to a fraction, n/p, of the second of the chip rates,~~
~~where~~ n/p is selected from 1/2, 2/5, 1/3, 1/4, and 1/5.

Claim 44 (original) The signal processor of claim 43, wherein the processor is further operable
to: set the number of slots within the frame to 15, if n/p is equal to 1/2 or 1/4; set the number of
slots within the frame to 10, if n/p is equal to 1/3; and set the number of slots to 12, if n/p is
equal to 1/5 or 2/5.

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Claim 45 (original) The signal processor of claim 44, wherein the processor is further operable to:

select the spreading factor based on a quality of service, q, and the operating chip rate.

Claim 46 (original) The signal processor of claim 40, wherein the processor is further operable to:

where the first of the two chip rates is equal to a fraction, n/p, of the second of the chip rates, and where i=1 to 2, n=1 to i, and q=0 to (7-i+n-1), select the spreading factor, SF_R, as

$$SF^R = n \times \frac{512}{2^{q+i}} \; .$$

Claim 47 (original) The signal processor of claim 46, wherein the processor is further operable to:

select a number of slots, $N_S{}^R$, as:

if $p=2^i$, $N_S{}^R = N_S$,

if $p = 2^i + 1$, $N_S^R = N_S \times \frac{2^i}{p} \; .$

Claim 48 (original) The signal processor of claim 43, wherein the processor is further operable to:

select the spreading factor, SF^R, as:

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$$\text{if } n/p = \frac{1}{2} \text{ or } \frac{1}{4}, \; SF^R = \frac{512}{2^{q+1}},$$

$$\text{if } n/p = \frac{1}{3}, \frac{1}{5} \text{ or } \frac{2}{5}, \; SF^R = n \times \frac{512}{2^{q+2}}.$$

Claim 49 (original) The signal processor of claim 40, wherein the processor is further operable to generate a synchronization signal at the selected operating downlink chip rate.

Claim 50 (original) The signal processor of claim 40, wherein the processor is further operable to:

where the first of the two chip rates is equal to a fraction, n/p, of the second of the chip rates, and where i=1 to 2, n=1 to i, and q=0 to (6-i+n-1), select the spreading factor, SF^R, as

$$SF^R = n \times \frac{256}{2^{q+i}}.$$

Claim 51 (original) The signal processor of claim 50, wherein the processor is further operable to:

select a number of slots, $N_S{}^R$, as:

$$\text{if } p=2^i, \; N_S{}^R = N_S,$$

$$\ldots$$

$$\text{if } p = 2^i + 1, \; N_S^R = N_S \times \frac{2^i}{p}.$$

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Claim 52 (original) The signal processor of claim 43, wherein the processor is further operable to:

select the spreading factor, SF^R, as:

$$\text{if } n/p = \frac{1}{2} \text{ or } \frac{1}{4}, SF^R = \frac{256}{2^{q+1}},$$

$$\text{if } n/p = \frac{1}{3}, \frac{1}{5} \text{ or } \frac{2}{5}, SF^R = n \times \frac{256}{2^{q+2}}.$$

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